

WHAT IS CLAIMED IS:

1. A method of quantitating IL-1 β in a bone marrow preparation comprising:
 - a) culturing stromal cells with said bone marrow preparation;
 - b) determining the amount of IL-6 produced by said stromal cell culture; and
 - c) correlating the amount of IL-6 produced to the IL-1 β concentration in said bone marrow preparation by comparison to a standard curve prepared by measuring IL-6 produced by stromal cells contacted with known concentrations of IL-1 β .
2. The method of claim 1, wherein said bone marrow preparation is from a patient suffering from multiple myeloma (MM) or a multiple myeloma-related plasmaproliferative disorder.
3. A method of detecting multiple myeloma (MM) in an individual comprising:
 - a) culturing stromal cells with a bone marrow preparation from said individual; and
 - b) determining the amount of IL-6 produced by said stromal cell culture, wherein an elevated level of IL-6 is indicative of MM.
4. A method of identifying a patient with a multiple myeloma-related plasmaproliferative disorder likely to progress to active multiple myeloma (MM) comprising:
 - a) culturing stromal cells with a bone marrow preparation from said patient; and
 - b) determining the amount of IL-6 produced by said stromal cell culture, wherein an elevated level of IL-6 is indicative of a likelihood said patient will progress to active MM.
5. The method of claim 4, wherein said multiple myeloma-related plasmaproliferative disorder is monoclonal gammopathy of undetermined significance (MGUS).
6. The method of claim 4, wherein said multiple myeloma-related plasmaproliferative disorder is smoldering multiple myeloma (SMM).

1 ~~7.~~ The method of claims 3 or 4, wherein an elevated level of IL-6 is a
2 ~~concentration of IL-6 greater than that produced by stromal cells incubated with 1 pg/ml of~~
3 ~~recombinant IL-1 β .~~

Sub. C3
4 8. The method of any one of claims 1-7, wherein said bone marrow preparation
5 is selected from the group consisting of a fresh supernatant from cultured bone marrow cells,
6 a previously frozen supernatant from cultured bone marrow cells and a mononuclear cell
7 preparation purified from bone marrow.

8 9. The method of any one of claims 1-7, wherein an inhibitor of IL-1 β is added
9 to the stromal cell culture of step a).

10 10. The method of claim 9, wherein said inhibitor of IL-1 β is selected from the
11 group consisting of an anti-IL β antibody, a soluble IL-1 receptor (sIL-1R) type I, a sIL-1R
12 type II, an interleukin-1 receptor antagonist (IL-1ra) and an IL-1 TRAP.

13 11. A method of identifying a patient with a multiple myeloma-related
14 plasmaproliferative disorder likely to progress to active multiple myeloma (MM) comprising:
15 a) culturing a bone marrow preparation from said patient with a T-cell line that
16 produces IL-2 in response to IL-1 β ;
17 b) determining the amount of IL-2 produced by said T-cell line; and
18 c) identifying said patient as likely to progress to MM if said amount of IL-2 is
19 elevated.

20 12. The method of claim 11, wherein said multiple myeloma-related
21 plasmaproliferative disorder is monoclonal gammopathy of undetermined significance
22 (MGUS).

23 13. The method of claim 11, wherein said multiple myeloma-related
24 plasmaproliferative disorder is smoldering multiple myeloma (SMM).

1 14. The method of claim 11, wherein said T-cell line is selected from the group
2 consisting of EL4.6.1, LBRM 33 and primary cultures of thymocytes.

3 *Sub C 4* 15. A method of monitoring the effectiveness of the treatment of a patient
4 multiple myeloma (MM) comprising:

- 5 a) culturing stromal cells with a bone marrow preparation from said patient after
6 the initiation of treatment;
7 b) determining the amount of IL-6 produced by said stromal cell culture; and
8 c) comparing said amount of IL-6 with a known standard or a patient determined
9 standard.

10 16. A method of treating a patient with multiple myeloma (MM) comprising:

- 11 a) identifying a patient with MM; and
12 b) administering an inhibitor of interleukin-1J (IL-1J) to said patient.

13 17. A method of inhibiting interleukin-6 (IL-6) production by bone marrow
14 stromal cells in a patient suffering from multiple myeloma (MM) or a multiple myeloma-
15 related plasmoproliferative disorder comprising administering an inhibitor of interleukin-1 β
16 (IL-1 β) to said patient in an amount effective to inhibit the production of IL-6 by said bone
17 marrow stromal cells.

18 18. A method of inhibiting interleukin-6 induced myeloma cell proliferation in a
19 patient suffering from multiple myeloma (MM) or a multiple myeloma-related
20 plasmoproliferative disorder comprising administering an inhibitor of interleukin-1 β (IL-1 β)
21 to said patient in an amount sufficient to inhibit myeloma cell proliferation.

22 19. The method of either of claim 17 or claim 18, wherein said multiple myeloma-
23 related plasmoproliferative disorder is selected from the group consisting of monoclonal
24 gammopathy of undetermined significance (MGUS), smoldering multiple myeloma (SMM)
25 and indolent multiple myeloma (IMM).

1 20. A method of inhibiting the progression from monoclonal gammopathy of
2 undetermined significance (MGUS) to multiple myeloma (MM) in a patient suffering from
3 MGUS comprising administering an inhibitor of interleukin-1 β (IL-1 β) to said patient.

4 21. A method of inhibiting the progression from smoldering multiple myeloma
5 (SMM) to multiple myeloma (MM) in a patient suffering from SMM comprising
6 administering an inhibitor of interleukin-1 β (IL-1 β) to said patient.

7 22. The method of any one of claims 17-21, wherein said inhibitor of IL-1 β is
8 selected from the group consisting of an anti-IL β antibody, a soluble IL-1 receptor (sIL-1R)
9 type I, a sIL-1R type II, an interleukin-1 receptor antagonist (IL-1ra) and an IL-1 TRAP.

10 23. A kit comprising:

- 11 a) an inhibitor of bioactive IL-1 β ;
12 b) a negative control for the inhibitor of bioactive IL-1 β ; and
13 c) a positive control for bioactive IL-1 β .

14 24. The kit of claim 23, wherein the inhibitor of bioactive IL-1 β is selected from
15 the group consisting of an anti-IL β antibody, a soluble IL-1 receptor (sIL-1R) type I, a sIL-
16 1R type II, an interleukin-1 receptor antagonist (IL-1ra) and an IL-1 TRAP.

17 25. The kit of claim 23, wherein said positive control for bioactive IL-1 β is
18 recombinant IL-1 β .

19 26. The kit of claim 23, further comprising a label or package insert indicating
20 that said positive control for bioactive IL-1 β is used to prepare a standard curve of IL-6
21 produced by stromal cells contacted with known concentrations of bioactive IL-1 β .

22 27. The kit of claim 23 further comprising bone marrow stromal cells.